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10/021,012	12/19/2001	Masahiro Yasukawa	040076.01	9786

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EXAMINER	
QI, ZHI QIANG	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,012	YASUKAWA, MASAHIRO	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10,11 and 16-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10,11 and 16-19* is/are allowed.

6)☒ Claim(s) *20-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 08/955,461.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant canceled claims 1-9, 12-15, and amended claims 10-11, and added new claims 16-26.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,767,827 (Kobayashi et al) in view of US 5,510,918 (Matsunaga et al) and US 5,056,895 (Kaha).

Claims 20 and 23, Kobayashi discloses (col.4, lines 18-64; Fig.1) that a substrate for a liquid crystal panel comprising:

- a first substrate (1);
- a second substrate (16) opposed to the first substrate;
- a liquid crystal (14) there between;
- a pixel region having reflecting electrodes (9) (made of aluminum) formed on a substrate (1);
- a passivation film (11) is a silicon dioxide (SiO_2) covering the reflecting electrode (9), and because a dielectric layer (12) laminated on the passivation

film (11), so that passivation film (11) functions as a SiO_2 film that is a same layer as the SiO_2 film.

Kobayashi does not explicitly disclose that a structure of a peripheral region having a laminate structure of metal layer and insulating layer formed above the substrate; and the passivation film formed on the laminate structure comprising a silicon nitride film formed on a silicon oxide film.

However, Matsunaga discloses (col.4, line 12 – col.5, line 32; Fg.1, 8) that a structure of a peripheral region arranged in the peripheral of the pixel region on the substrate (SUB1) having gate terminals (GTM) and drain terminals (DTM) (because the terminals made of conductive material for the conductivity such as metal, so that is metal layer), and insulating layer for insulating the different terminals such as insulating layer (GI) insulating the scanning signal line (GL) and video signal line (DL), so that to constitute a laminate structure above the substrate (SUB1). Matsunaga also discloses (col.7, line 62 – col.8, line 20; Fig.8) that a liquid crystal display comprising a passivation film (PSV1) made from silicon nitride film or silicon oxide film formed at the peripheral region, and the passivation film (PSV1) having a high passivation effect is made sufficiently larger than the insulating film (GI) so as to have its peripheral portion being passivated as wide as possible for achieving more protection.

Still lacking limitation is such that a passivation film having a laminated structure comprising a silicon nitride film formed on a silicon oxide film.

However, Kahn discloses (col.4, line 51 – col.6, line 66; Fig.1) that a liquid

crystal panel substrate comprising a semiconductor substrate (40) and is then covered with a silicon dioxide dielectric insulating layer (50), and an additional oxide layer (53) covers the first oxide layer, and both of them are between the electrode (70) (composed of Au 'gold', so that must be reflective electrode) and the drain electrode (44) (the drain electrode must be a conductive metal material). Therefore, the insulating interlayer (50,53) has a laminate structure. Kahn also indicates (col.5, lines 40-42) that the composition of oxide layer 50,53,64,68, is well known in the art, and is preferably either SiO_2, or Si_3N_4. Therefore, the insulating layer (53) using silicon nitride film formed on the insulating layer (50) using silicon oxide film would have been obvious, and using dielectric films having different optical density would have dielectric mirror effect to increase the reflectance.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use laminated insulating films as claimed in claims 20 and 23 for more protection and increasing the reflectance.

Claims 21-22 and 24-25, Kobayashi discloses (col.4, lines 18-64; Fig.1) that a liquid crystal panel comprising:

- a capacitance electrode (20) (the capacitance electrode '20' must be made of a metal, also the data line '8' and the drain electrode '23' must be made of metal, and functions as a light shielding layer) between the reflecting electrodes (9) and the switching element (2,3,4);
- an insulating interlayer (such as insulating film 7b) formed between the reflecting electrodes (9) and the capacitance electrode (20) (functions as a

light shielding layer);

- a passivation film (11) formed by silicon oxide film on the reflecting electrode (9);
- the insulating films (7a.7b) is a laminate structure formed at space between the adjacent reflecting electrodes (9).

Kobayashi does not explicitly disclose that the insulating interlayer comprising a silicon nitride.

However, Matsunaga discloses (col.7, line 62 – col.8, line 20; Fig.8) that a liquid crystal display comprising a passivation film (PSV1) made from silicon nitride film or silicon oxide film, and the passivation film (PSV1) having a high passivation effect is made sufficiently larger than the insulating film (GI) for achieving more protection.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange insulating interlayer of a laminate structure using silicon nitride and silicon oxide as claimed in claims 21-22 and 24-25 for achieving high passivation effect.

3. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,767,827 (Kobayashi et al) in view of US 5,510,918 (Matsunaga et al).

Claim 26, Kobayashi discloses (col.4, lines 18–64; Fig.1) that a liquid crystal panel comprising:

- a pixel region having a reflecting electrodes (9) formed on a substrate (1), and a switching element (2,3,4) formed corresponding to each of the reflecting electrode (9);

- a capacitance electrode (20) (the capacitance electrode '20' must be made of a metal, also the data line '8' and the drain electrode '23' must made of metal, and functions as a shielding layer) formed between the reflecting electrodes (9) and the switching element (2,3.4);
- an insulating interlayer (such as insulating film 7b) formed between the reflecting electrodes (9) and the capacitance electrode (20) (functions as a light shielding layer);
- a passivation film (11) formed by silicon oxide film covering the reflecting electrode (9) and the space between the adjacent reflecting electrodes (9);
- the passivation film (11) and the insulating films (7a and 7b) (as an insulating interlayer) form a laminate structure at the space between the adjacent reflecting electrodes (9).

Kobayashi does not expressly disclose that the insulating film is silicon nitride film.

However, Matsunaga discloses (col.7, line 62 – col.8, line 20; Fig.8) that a liquid crystal display comprising a passivation film (PSV1) made from silicon nitride film or silicon oxide film, and the passivation film (PSV1) having a high passivation effect is made sufficiently larger than the insulating film (GI) for achieving more protection.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange insulating interlayer of a laminate structure using silicon nitride and silicon oxide as claimed in claim 26 for achieving high passivation effect.

Allowable Subject Matter

4. Claims 10-11, 16 and 17-19 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor teaches a structure for a liquid crystal panel comprising various elements as claimed, more specifically, as the following:

a scribed region arranged on an outer side of the periphery region, a step formed between the periphery region and the scribed region, the laminate structure having a sidewall at the step; and a passivation film covering the sidewall of the laminate structure and comprising a silicon nitride film as shown in the Fig.4 [claims 10 and 17].

The closest references such as Kobayashi, Shintani and Shimada disclose a structure for a liquid crystal panel in which the peripheral portion having laminate structure, and the passivation film covering the reflecting electrodes, and the insulating interlayer comprising silicon nitride or silicon oxide. However, the prior art of record do not disclose a passivation film covering the sidewall of a laminate structure and a step formed between the periphery region and the scribed region as shown in the Fig.4.

Response to Arguments

6. Applicant's arguments filed on May 26,2004 have been fully considered but they are not persuasive.

Applicant's arguments are as follows:

1) The references do not disclose a first passivation film having a silicon oxide film and a silicon nitride film formed on the silicon oxide film, and second passivation film covering reflecting electrode as claimed in claims 20 and 23, and a passivation film formed by a silicon oxide film and an insulating interlayer formed by a silicon nitride film form a laminate stricture at space between adjacent reflecting electrodes as claimed in claim 26.

Examiner's responses to Applicant's arguments are as follows:

1) The references such as Kobayashi disclose (col.4, lines 18-64; Fig.1) that a passivation film (11) is a silicon dioxide (SiO_2) covering the reflecting electrode (9), and because a dielectric layer (12) laminated on the passivation film (11), so that passivation film (11) functions as a SiO_2 film that is a same layer as the SiO_2 film, and the reference such as Kahn indicates (col.5, lines 40-42) that the composition of oxide layer 50,53,64,68, is well known in the art, and is preferably either SiO_2, or Si_3N_4. Therefore, the insulating layer (53) using silicon nitride film formed on the insulating layer (50) using silicon oxide film would have been obvious as claimed in claims 20 and 23. The references such as Kobayashi also discloses (col.4, lines 18–64; Fig.1) that a passivation film (11) and the insulating films (7a and 7b) (as an insulating interlayer) form a laminate structure at the space between the adjacent reflecting electrodes (9) as claimed in claim 26.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi
June 14,2004

ROBERT H. KIM
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